

IN THE CLAIMS:

1 1. Hydrotreatment process of a hydrocarbon feedstock
2 using at least one hydrotreatment reactor and a fractionation
3 unit, said fractionation unit containing two separate first and
4 second injection zones for hydrocarbon feedstocks each zone being
5 in flow communication with a common upper vaporization zone for
6 the light fractions and each injection zone having its own
7 distinct draw-off line for the liquid bottoms from such
8 respective injection zone, said process comprising:

- subjecting the hydrocarbon feedstock to a preliminary
desulfurization treatment,
- injecting the hydrocarbon feedstock into the first injection
zone of the fractionation unit,
- removing the liquid bottoms through the draw-off line of the
first injection zone and passing such bottoms from the first zone
on into said hydrotreatment reactor,
- injecting the effluents from said hydrotreatment reactor
into said second injection zone of the fractionation unit,
- passing the light fractions from the common zone through an
evacuation line, and
- removing the heavy liquid bottoms of the second injection
zone through the draw-off line of the second injection zone.

1 2. Process according to Claim 1, wherein said
2 preliminary desulfurization treatment is carried out in an
3 apparatus chosen from the group consisting of a first

hydrodesulfurization reactor the operating conditions of which (P, T, LHSV) can vary from those of said hydrotreatment reactor, a sweetening apparatus, and a sulfur trap.

3. Process according to Claim 2, wherein said hydrotreatment reactor is a hydrodesulfurization reactor.

4. Process according to Claim 3, wherein said hydrocarbon feedstock is chosen from the group consisting of gasoline, kerosene, gas oil, and a vacuum distillation cut.

5. Process according to Claim 4, wherein the liquid bottoms of said injection zones of the fractionation unit are isolated from each other by a partition disposed inside the fractionation unit.

6. Process according to Claim 5, wherein the partition is vertical.

7. Process according to Claim 5, wherein the partition is horizontal.

8. Process according to Claim 1, wherein the light fractions leaving the common zone through the evacuation line have a sulfur content that is lower or equal to a set limit value determined by the desired product quality.

9. Process according to Claim 1, wherein the light fractions leaving the fractionation unit through the evacuation line are treated in a third reactor specifically to modify their residual content of sulfur or aromatic compounds.

1 ~~10. Process according to Claim 9, wherein catalyst~~
2 ~~used in said third reactor is different from that used in said~~
3 ~~hydrotreatment reactor and is platinum-based or thioresistant.~~

1 11. Apparatus for hydrotreating a hydrocarbon
2 feedstock comprising:

3 a hydrocarbon feedstock supply,
4 a desulfurization reactor fed by said supply,
5 at least one separate hydrotreatment reactor,
6 a fractionation unit disposed between the desulfurization
reactor and said hydrotreatment reactor,

07 5 15 25 35 45 55 65 75 85 95 105 115 125 135 145 155 165 175 185 195 205 215 225 235 245 255 265 275 285 295 305 315 325 335 345 355 365 375 385 395 405 415 425 435 445 455 465 475 485 495 505 515 525 535 545 555 565 575 585 595 605 615 625 635 645 655 665 675 685 695 705 715 725 735 745 755 765 775 785 795 805 815 825 835 845 855 865 875 885 895 905 915 925 935 945 955 965 975 985 995
8 said fractionation unit containing an internal partitioning
structure defining two distinct injection zones in flow
communication with a common upper vaporization zone,

11 an evacuation line for withdrawal downstream of light
12 fractions from the vaporization zone,

13 said fractionation unit having separate lines for carrying
14 respectively the effluents from the desulfurization reactor and
15 the effluents from the hydrotreatment reactor to the
16 fractionation unit, with one of said lines carrying the effluents
17 from the desulfurization reactor into one of said zones, and the
18 other of said lines carrying the effluents from the
19 hydrotreatment reactor into the other of said zones,

20 - the fractionation unit having two different draw-off lines
21 through which are removed, from the injection zones respectively,
22 the liquid bottoms of the effluents of the desulfurization

23 reactor that are passed on to the hydrotreatment reactor and
24 separately of the effluents from the hydrotreatment reactor that
25 are passed on downstream.

1 12. Hydrotreatment apparatus according to Claim 11,
2 wherein the desulfurization reactor is a hydrodesulfurization or
3 a sweetening reactor.

1 13. Hydrotreatment apparatus according to Claim 11,
2 wherein the separation means is a vertical partition extending
3 from the bottom of the fractionation unit.

1 14. Hydrotreatment apparatus according to Claim 13,
2 wherein the partition consists of a cylindrical element disposed
3 inside and preferably concentrically with the vertical wall of
4 the fractionation unit.

1 15. Hydrotreatment apparatus according to Claim 11,
2 wherein the separation means are horizontal and that the two
3 lines carrying, respectively, the effluents from the
4 desulfurization reactor and from the hydrotreatment reactor end
5 at different heights of the fractionation unit respectively above
6 and below the horizontal position of the separation means.

1 16. Hydrotreatment apparatus according to Claim 15,
2 wherein the horizontal separation means is a tray provided with
3 at least one riser.

1 17. Hydrotreatment apparatus according to Claim 11,
2 wherein the hydrotreatment reactor is a hydrodesulfurization
3 reactor.

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